CLAIMS

I claim:

1. A method for the reduction of load cycle oscillations in the drive train of a motor vehicle, the method comprising:

detecting a change in an available torque in the drive train of a motor vehicle, said change causing a load cycle oscillation having a period,

determining the period of the load cycle oscillation, and

at the commencement of the change in available torque, applying at least one torque pulse which causes an oscillation in phase opposition to the load cycle oscillation, said torque pulse having a duration which is about half the period of the load cycle oscillation.

2. A method as in claim 1 further comprising detecting the magnitude of the available torque, said torque pulse having a magnitude which is about half the magnitude of the available torque.

3. A method as in claim 1 wherein said torque pulse is triggered by a logic device.

4. A method as in claim 1 wherein said torque pulse is applied by an electric motor.

5. A method as in claim 1 wherein said torque pulse is applied by a starter motor of the vehicle.

6. A method as in claim 1 wherein said torque pulse is applied by a rotating mass via a brake.

7. A method as in claim 1 wherein said torque pulse is controlled by torque information from engine electronics.

8. A method as in claim 1 further comprising determining a change in rotational speed, and deriving control of the torque pulse from the change in rotational speed.

9. A method as in claim 1 wherein said torque pulse is applied to the engine of the motor vehicle.

10. A method as in claim 1 wherein said drive train comprises a flywheel having a primary part and a secondary part, said torque pulse being applied to one of said primary part and said secondary part.

11. A method as in claim 1 comprising applying a first torque pulse having a negative value with respect to said available torque, and applying a second torque pulse having a positive value with respect to said available torque.

12. A method as in claim 1 wherein said torque pulse commences at the time of synchronization during one of a gear change and starting the engine.

13. A method as in claim 1 wherein said torque pulse commences during one of a first rise in available torque and an engine torque in opposition to said available torque.

14. A method as in claim 1 comprising a first torque pulse and a second torque pulse, said second torque pulse commencing one period later than commencing the first torque pulse.

15. A method as in claim 1 comprising providing first, second, and third torque pulses in succession, said second torque pulse directed opposite to said first and third torque pulses.

16. An apparatus for the reduction of load cycle oscillations in the drive train of a motor vehicle, the apparatus comprising:

means for detecting a change in an available torque in the drive train of a motor vehicle, said change causing a load cycle oscillation having a period,

means for determining the period of the load cycle oscillation,

means for generating a torque pulse coupled to the drive train, and

logic means for triggering the torque pulse at the commencing of a load cycle oscillation, said logic means controlling said torque pulse so that it lasts half the period of the load cycle oscillation and is in phase opposition to the load cycle oscillation.

17. An apparatus as in claim 16 wherein said means for generating a torque pulse is an electric motor which is coupled to an internal combustion engine.

18. An apparatus as in claim 16 wherein said drive train comprises a flywheel having a primary part and a secondary part, said means for generating a torque pulse being coupled to one of said primary part and said secondary part.

19. A control program for the reduction of load cycle oscillations in the drive train of a motor vehicle, the program comprising the following program steps:

detecting a change in an available torque in the drive train of a motor vehicle, said change causing a load cycle oscillation having a period,

determining the period of the load cycle oscillation, and

generating a control signal for generating a torque pulse having a duration which is about half the period of the load cycle oscillation and is in phase opposition to the load cycle oscillation.

20. A control program as in claim 19 wherein said program is stored on a data carrier.

21. A control apparatus for the reduction of load cycle oscillations in the drive train of a motor vehicle, said control apparatus having a control program with a program ~~codefor~~ code for carrying out the following steps:

detecting a change in an available torque in the drive train of a motor vehicle, said change causing a load cycle oscillation having a period,

determining the period of the load cycle oscillation, and

at the commencement of the change in available torque, applying at least one torque pulse which causes an oscillation in phase opposition to the load cycle oscillation, said torque pulse having a duration which is about half the period of the load cycle oscillation.